TRUST, OPPORTUNISM AND GOVERNANCE

A PROCESS AND CONTROL MODEL

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SOM theme B: Marketing and Networks

Abstract

The article develops a process and control model for the analysis and design of inter-firm relations, in which both opportunism and trust play a role. Its aim is to develop a tool which helps to analyze combinations, balances and imbalances of trust and opportunism, formal and informal forms of governance, and viable sequences of strategies of governance, depending on different conditions. It employs both transaction cost economics and social exchange theory.

1. Introduction

The purpose of the present article is to set up a process and control model for the analysis of the process of development of inter-firm relations, and the design of their control ("governance"), in which allowance is made for both opportunism and trust. This aligns with the conclusion by Ring & Van de Ven (1994: 113) that:

> *"As the uncertainty, complexity, and duration of economic transactions within and between firms increase, it becomes increasingly important for scholars and managers to understand developmental processes of how equity, trust, conflict-resolution procedures and internal governance structures emerge, evolve, and dissolve over time."*

As Joag (1995: 406) noted recently concerning vertical relations between suppliers and users:

> *"Even though marketing aims at understanding, explaining, predicting and influencing exchanges in human society (Bagozzi, 1975; Dwyer, Schur & Oh, 1987), most research has been concentrated only on steps leading to choice ... that end in the selection of suppliers (Webster & Wind, 1972), thus leaving all processes beyond unmentioned."*

In view of this we focus on the process of development and governance after an exchange relation has been started. Transaction costs comprise costs of search and evaluation, costs of setting up governance prior to transactions, and costs of control and redesign of the relation. Here we focus on the third kind.

We are aiming at a model in the sense of a systematic, coherent structure of hypotheses concerning causal factors and their relations. Its purpose is to move beyond a simple checklist of relevant factors to an instrument for diagnosis and design of relations, which takes into account the mutual causality of factors. It should yield a tool to explore balances and imbalances between trust and opportunism, and formal and informal forms of governance; to identify instruments for governance, and their selection, in relation to events that might trigger action. Initially, the model is only partly formalized and tested. The

subsequent objective, beyond the present article, is to employ the model as a basis for simulation studies of the evolution of subcontracting relations, and for further applications of game theory in the analysis of strategies of governance[1].

Those studies will show how far formalization can usefully be taken.

The basic analysis, in the present article, is applicable to relations in general, including both horizontal relations between competitors and vertical relations of subcontracting, or even entirely different relations, such as marriages, but subcontracting forms the main intended area of application.

2. Theory

The theoretical perspective of the article is interdisciplinary, combining insights from economics and sociology. From economics we use Transaction Cost Economics (TCE) (Williamson, 1975, 1985). TCE is useful for dealing with problems of opportunism and dependence in transaction relations. In TCE these are seen to result from "lock-in" due to "transaction specific investments" and limited opportunities to control opportunism with closed contracts, due to unforeseeable contingencies in conduct and conditions ("bounded rationality"). However, TCE has serious shortcomings (Johanson & Mattson, 1987; Nooteboom, 1992, 1993b; Hodgson, 1993; Pitelis, 1993, 1994; Dietrich, 1993; Foss, 1993; Berger, Noorderhaven, Nooteboom & Pennink, 1993). The two basic gaps in the theory are a lack of dynamics and the absence of a role for trust next to opportunism. A sociological perspective is needed to fill those gaps. Like most mainstream economics TCE does not go beyond comparative statics, while we are interested in the dynamics of relations. Such dynamics include at least the following two types of phenomena:

- Shifts of perception, knowledge and understanding (including mutual understanding between transaction partners), competence, goals, motives, trust and opportunism, as a relation develops.

[1] For the use of game theory in an attempt to reconstruct different generic forms of supplier-user relations ("Western, Japanese and a Third Way"), see Nooteboom (1994).

- Events and changing conditions outside the relation: technological development, shifts in supply and demand due to entry and exit of firms, etc.

Transactions are to be seen as embedded in relations that develop in time, under changing conditions.

It is a peculiar thing in TCE that on the one hand passage of time is crucial, but on the other hand relevant parameters are seen as timeless. According to TCE, a crucial condition for dependence is that time is required, with repeated transactions, to recoup transaction specific investments, and allowance is made for the emergence of unpredictable contingencies that preclude closed contracts to govern dependence. On the other hand TCE implicitly assumes continuation of ex ante inability to judge propensities towards opportunism, unchanged configuration of supply and demand (no novel and perhaps more attractive customers or suppliers appearing on the scene), productive competencies, and ability to monitor partner's actions. But surely, ongoing interaction will modify those parameters.[2] Associated with the lack of dynamics in TCE, there is a fundamental issue concerning implicit theories of knowledge (Hodgson, 1988, 1993; Nooteboom, 1992, 1993b).

According to TCE the advantage of outside sourcing lies in the mobilization of market incentives, and specialization as a means to achieve economies of scale, as a source of efficiency. The latter view of specialization is limited, in that the tacit assumption, typical of neoclassical economics, is that perception, knowledge and competence are not pathdependent, and are objective and 'given'; available like goods on a shelf in the shop of technology, to be had at the going price. In neoclassical economics, perception, knowledge and preference are given exogenously, as a basis for rational choice. Since learning is not part of the theory, the theory is blind to the possible role of transactional relations in shifting perception, knowledge and preference.

[2] It is reasonable to say that prior to transaction one is uncertain about the partner's potential opportunism, and hence should take opportunism into account. Once one takes time into account, in ongoing transactions, it is not reasonable to ignore the formation of perceptions about propensities towards opportunism, and the possibility of building trust.

In fact, a crucial value of transaction relations lies in complementarity of knowledge, competence and access to other resources. This suggests that different firms, with different histories, in different contexts of markets and technologies, have grown different perspectives and cognitive competencies that cannot be easily and instantaneously adopted or transferred (pathdependence). Therefore, linkages with other firms are sought to gain access to competencies, including cognitive competencies, that are lacking in one's own firm (Granovetter, 1982; Nooteboom 1992, 1993b, 1994). However, issues of cognition and learning are not the focus of the present article, and are discussed elsewhere (Nooteboom, 1995; Péli & Nooteboom, 1995).

In spite of Williamson's acknowledgement of "atmosphere" as a relevant factor in transactions, he neglects issues of trust and power. The view of the present paper is that these issues are important, that a dynamic treatment of ongoing relations allows for the building of trust, and to study this we need contributions from sociology and anthropology, on trust and social exchange (Luhmann, 1979, 1988; Blau, 1964; Homans 1961; Granovetter, 1981, 1985; Gambetta, 1988).

The view that transactions are embedded in relations that develop in time has been advocated for a number of years in marketing and purchasing by the International Marketing and Purchasing Group (IMP; Hakansson, 1982, 1987; Hagg & Johanson, 1983; Easton, 1989) and others (Jarillo, 1988; Lamming, 1993; Semlinger, 1991). Exchange leads to mutual adaptation, which entails investment in a relation. As a result of this, bonding between the actors develops, trust is generated, and a lasting relation emerges (Johanson & Mattson 1987, Easton 1989). A comparable attempt towards a process approach was recently published by Ring and Van de Ven (1994; unfortunately without any reference to the IMP group and other European work in this area).

The inclusion of the perspective of learning and interaction constitutes a major attraction of the IMP perspective. However, if the IMP view can be taken to imply a rejection of the TCE view as a whole, it runs the risk of throwing away the baby with the bathwater. Doubtless, in present conditions of turbulence firms require interactions in networks, trust forms an important dimension in

such relations, and as pointed out by Hirschman (1984) trust may increase with its usage. But there are risks as well: trust is not unbounded, it cannot be taken from granted, and it may break down. As Dasgupta (1988: 54) put it: "If the incentives are right a trustworthy (untrustworthy) person may be relied upon to be untrustworthy (trustworthy)". "Golden opportunities" of defection are tempting even to the trustworthy.

TCE has contributed greatly by specifying rigorously what the nature and extent of risk in transactions is: if there is opportunism, and bounded rationality makes it impossible to foresee it and to foreclose its undesirable consequences, then one runs the risk of loss of investment to the extent that investments are relation specific, or "hold-up" situations as a consequence of that risk. Next, TCE has supplied indications how to construct schemes for "governing" transactions in such a way that risks are reduced: in bilateral private ordering the use of different guarantees to compensate for one sided transaction specific investments (symmetrical specific investments, cross-ownership of specific assets, hostages, guaranteed price, volume or period of purchase), and countermeasures to guard against invalid use and expropriation of such guarantees. In infrequent transactions: trilateral governance, with some third party acting as an arbitrator. These concepts are of theoretical and practical use, and it is a waste to ignore them.

Both trust and opportunism are likely to arise in transaction relations, neither should be ignored, and we should find a way of systematically exploring their joint occurrence and the relations between them, in relation to formal and informal measures of governance, in a dynamic context. Therefore, in spite of the differences between the two outlooks (TCE and IMP; economics and sociology), we should seek to integrate them. That is the theoretical point of departure of the present article. Taking elements from both perspectives, the present aim is to analyze the different factors that determine cooperation and dependence between partners in a coherent scheme that provides the basis for an analysis and description of the process of strategic interaction in a relation, as a function of conditions such as the market and technology, and strategic orientations of the partners, and evolution of the relation in time.

3. Cooperation and trust

The concept of trust is found to be, and tends to remain, subtle, diffuse and elusive. One starts to feel sympathy for the economist's inclination to evade the issue, but we cannot afford to do that. Here, I do not pretend to provide a definitive definition of trust, but try to employ the concept with all the subtleties found for it in the literature (Gambetta, 1988).

Since our focus is on relations between organizations, the question arises what the relation is between the conduct of individuals and firms: the "micro-micro" problem. As argued by Ring & Van de Ven (1994), they are related by roles that individuals are assigned in organizations. Conduct "qua persona" is restricted and guided by organizational roles. Alignment between the two can be a problem. If cooperation is founded on trust based on personal bonding, problems may arise concerning the exigencies of organizational role. Personal loyalty may deviate from organizational interest, and may even lead to corruption or embezzlement. Too strong personal ties may need to be prevented by turnover of personnel across roles. Conversely, personnel change may lead to a breakdown of relations based on personal trust. Such considerations should be part of governance.

Trust may concern a partner's ability to perform according to the intentions and expectations of a relation (competence trust), or his intentions not to defect willingly (behavioural trust). Here, we focus on the latter type of trust. Of course, risks due to failures of competence are important in subcontracting relations, but they do no form the focus here. The focus is on the relation between behavioural trust and cooperation.

According to Williams (1988), cooperation requires willingness to accept dependence, which requires assurance that other, non dependent (or less dependent) parties will not defect in the cooperation. According to Dasgupta (1988), trust is associated with expectations regarding the other's choice of actions that have a bearing on one's own choice of action. Such expectations may have a strong or a weak basis, ranging from assurance from objective facts and logical reason, through belief which is less firmly based on experience and argument, to

unsubstantiated faith. Gambetta (1988b, 217) summarized different views on trust as the subjective probability that one assigns to action by another agent (or group of agents) which affects one's own action.

Luhmann (1988) emphasized that in trust there is an element of choice. If there is no choice, and one simply has to surrender to the powers that be, the belief that no harm will occur is a matter of confidence, not trust. Trust entails an action that one has a choice to conduct, and that one may later regret. One may or may not trust a potential business partner, and accept or refuse him as a partner. If it goes wrong, one attributes blame also to oneself for engaging in the relation. One has confidence or not in the law, or the political system, or God, without a choice whether or not to participate in them. If one is treated unjustly, the blame is on the system; not one's own choice.

Williams (1988) distinguished between macro and micro, and between egotistic and non-egotistic sources of cooperation. Micro sources depend on the specific relation at hand, while macro sources apply more generally. This yields four sources of cooperation, as indicated in figure 1.

Williams argued that none of these sources suffices by itself, and that in cooperation some mix will always be operative, while no universally best mix, regardless of specific conditions, can be specified. As set out by Gambetta (1988a), the mafia employs all four sources, in ways that mutually reinforce each other. Cooperation is forced by violent means, is materially rewarded, is enhanced by bonds of friendship and pseudo family (mafia "families", godfathers, etc.) and an ethic of non-betrayal ("omerta"). Both coercion by physical threat and material reward are applied not only directly, but also indirectly to family.

figure 1: sources of cooperation

	macro	micro
egotistic	coercion or fear of sanctions from some authority (god, law)	material advantage or "interest"
non-egotistic	ethics: values/norms of proper conduct	bonds of friendship, kinship or empathy

If trust is associated with a subjective probability that a partner will not make misuse of one's dependence, without further qualification, then anything that contributes to such subjective probability would belong to trust. However, trust is generally not associated with motives of self interest. We trust someone if he is likely to cooperate even if he is not coerced to do so and has no direct material interest in doing so. Thus trust is associated with the non-egotistic sources of cooperation; with loyalty to a partner due to ethics or bonds of friendship or kinship rather than coercion or material self-interest. The mafia needs to employ coercion and the lure of material interest because trust will not suffice as a basis for cooperation. Conversely, material self-interest and coercion are seldom sufficient as a basis for cooperation: one needs trust to the extent that one cannot fully control the partner's conduct by threat and reward (cf. Deutsch, 1962, quoted in Zand, 1972).

In this notion of trust, it is clear that trustworthiness varies between agents. It is to a large extent personal, particularly in the bonds of kinship and friendship, but also in the extent to which the person shares a given ethic or set of behavioural routines. When the agent is a firm, its trustworthiness is associated with ethics and behavioural routines, which are part of an organization's culture. Again, firm and individual are connected by organizational roles. And again, the alignment between a person "qua persona" and his organizational role may not be perfect. That depends, among other things, on the care in role allocation and discipline in role observance that the firm exercises. Variability of trustworthiness, and hence of its opposite, propensity towards opportunism, underlines the need to extend TCE with considerations of trust. If not everyone is equally opportunistic, then in the selection of a partner and in governing a relation with him, one should try to establish his particular propensity towards opportunism (cf. Noorderhaven, 1995).

Even the narrower concept of trust, as based on ethics and personal bonds, may be too wide, to the extent that ethics and kinship provide a form of social coercion rather than choice. In friendship or, more weakly, in relations of empathy or familiarity, trust in the sense of non-obligational and non-material sources of cooperation appears to be most "thick".

According to social exchange theory (Blau, 1964), in addition to an economic dimension (extrinsic utility), exchange often has a social dimension (intrinsic utility). Economists tend to think of value in exchange as something that exists independently from the transaction. As formulated by Murakami & Rohlen (1992, 70): "The value of the relationship itself is typically ignored and the impersonality of the transaction is assumed". In intrinsic utility, the exchange process itself matters, in addition to the economic surplus and its division that the exchange yields. People may prefer to transact on the basis of trust and its concomitants of ethics, kinship, friendship or empathy. Social exchange relies more on unspecified, implicit obligations[3], which depend on shared systems of meaning, belief and ethics.

Note that in addition to intrinsic utility in the form of a liking to transact on the basis of trust, such transaction, with its implicit, pre-existing and unspecified conditions for cooperation, economizes on the specification and monitoring of contracts and material incentives for cooperation. This makes it not only cheaper (and more agreeable), but also makes for greater flexibility. With detailed formal contracts it is more difficult (slow and costly) to modify terms for changed conditions. Apart from its own worth, trust pays. But it also carries a risk of the betrayal of trust.

Social exchange by its nature is restricted to insiders: people with whom one shares the basis for trust. Trust requires familiarity and mutual understanding, and hence depends on time and context. As indicated by Hirschman (1984): unlike most economic commodities, trust may grow rather than wear out by usage. If trust is associated with a subjective probability that a partner will cooperate, then a zero probability means blind distrust. The problem here is that because it prevents us from entering upon cooperation, we miss the opportunity to build trust on the basis of successful cooperation, and zero trust remains zero (cf. Gambetta, 1988b). On the other hand, if on the basis of a non-zero subjective probability of cooperation by the partner one enters cooperation, the

[3] The idea that exchange includes non-contractual elements of course goes back (at least) to Durkheim (1893).

probability will be adjusted on the basis of experience. It may grow, but that is not necessarily the case: naivety may be tuned down to realism. If trust is blind, in the form of a unit subjective probability, it is likely to be disappointed sooner or later, because few partners will be able to resist every "golden opportunity" for defection.

4. Definition of trust

On the basis of the above we adopt the following conceptualization:

> *X is willing to engage in cooperation with Y (i.e. enter upon cooperation or continue it), even if this makes X dependent, if X has a more or less well grounded belief, in the form of a subjective probability, that Y will cooperate in the sense of not mis-using such dependence. This belief may be based on (perceived) available* ***opportunities*** *for misuse on the part of Y, Y's* ***incentives*** *towards misuse, and Y's* ***propensity*** *to employ the opportunities. Inclination to use opportunities for defection is related to trust, which has its basis in ethics, kinship, friendship or empathy.*
> *My* ***definition of (behavioural) trust*** *would now be as follows:*
> *X trusts Y to the extent that X chooses to cooperate with Y on the basis of a subjective probability that Y will choose not to employ opportunities for defection that X considers damaging, even if it is in the interest of Y to do so. The trustworthiness of Y depends on Y's true propensity to employ those opportunities* *(1)*

Note that (1) indicates that:

- X and Y have a choice: to engage upon cooperation, at the risk of dependence (X), and to forego opportunities to misuse such dependence (Y)
- there are two mutually dependent types of choice: a choice to enter upon a relation of cooperation and to continue with it, and a choice whether or not to misuse dependence of one's partner in the relation (called "defection")
- the second type of choice (defection) is based on a combination of opportunities for defection, interest in defection and propensity not to

employ opportunities for defection

- trust relates to the last factor: the partner’s choice not to defect in spite of both a motive and an opportunity to do so
- trust is related to a propensity, not a certainty: it may not be resistant to golden opportunities.

Defection is closely related to the concept of opportunism, as employed in TCE: "interest seeking with guile", and to make the connection with TCE we will equate the two. Thus we will speak of "opportunities for opportunism", and the "propensity" to employ them. We may define power as opportunities to act against some-one’s interest in a way that he cannot control. Then power is close to opportunities for opportunism. Trust is then associated with the voluntary submission to power, on the belief that it will not be exercised.

In case of an organization, the subjective probability associated with trust depends on an assessment of: the ethical stance and routines that form part of the culture of the firm, the "tightness" with which individuals are tied to it in their organizational roles, relevant characteristics of the individual one is dealing with (his personal ethics, bonding), and the net effect on his propensity towards opportunism.

Now, is reputation a basis for trust, or is it part of interest? It can be either or both. In economics, the rationale for reputation is that it is built upon investments in the form of opportunities for opportunism foregone. To behave opportunistically is to surrender the investment, if opportunism is both detected and communicated at large, and this yields a rational basis for people to rely on reputation, at least to some extent (reputation may be surrendered when a "golden opportunity" presents itself). A complication is that reputation may be based on rational calculation of its benefit, as indicated, but may also be based on genuine trustworthiness in the sense of a non-egotistic propensity to forego opportunities for opportunism (on the basis of ethics, kinship, friendship, empathy). While both may be sensitive to breach by a golden opportunity, trustworthiness is more robust than calculation. It is less sensitive to the condition of detectability and communicability of a breach, and is less likely to

unravel when the end of business is in sight. The difference may not be easy to establish: that may require some minimum degree of experience and familiarity with a partner, or joint membership of a social community with sufficiently strong norms and values of cooperation.

While the analysis so far may appear useful, there is still much to be done. We need to further specify what is entailed in "cooperation", "dependence" and its "misuse"; in "interest" , "opportunities and propensities towards opportunism"; how they arise and develop and how they are controlled.

In our study there appear to be two fundamental questions:

A. On the basis of what motives will agents enter upon and maintain a relation?

B. How will agents act and react within relation? They may be jockeying for advantage, short of breaking up the relation. This question can be broken down into two questions:

   B1. How do agents behave in a relation, i.e. in a setting with given parameters of the relation? In particular: when will they act opportunistically?

   B2. How do they behave in trying to change the relation, i.e. change the parameters of the relation? In particular: how can they reduce their dependence?

In this article we focus on question B. We consider question B1 in the next section, and question B2 in the one after that.

5. Model of opportunistic conduct.

Relations of cooperation are incurred from an expectation of value (which may be both extrinsic and intrinsic) now and in the future. Thus value to X of a partner Y (VYX) is a key variable. It contains extrinsic value in the form of the surplus of exchange between specialized producers, and its distribution among the partners, but also includes intrinsic value in the relation. Here, it is specified as value relative to the next best alternative, which becomes negative when a more attractive partner presents himself. This allows for the event of a more

attractive alternative partner emerging on the scene, and the analysis of its consequences for the relation.[4]

Value is assessed not only in the present, but also on the basis of potential for the future. This is taken to imply some assessment of the probability that the relation will proceed in the future. As is well known from repeated games (Axelrod, 1984), this is crucial: a rational decision to defect opportunistically is then based on a trade-off between advantage now and loss of value from an ongoing relation in the future. In particular, opportunism affects perceived probabilities of an ongoing relation. Renunciation of opportunities for opportunism will enhance trust. This may contribute directly to value by increasing intrinsic value, and indirectly by increasing perceived probabilities of an ongoing relation.

The basic problem of dependence in relations is the possibility of loss due to mishap or opportunism: the size of damage that the partner may do, and the probability that he will do it:

$$LOX = SLX \times PRLX \qquad (2)$$

where: LOX = possible loss for X
SLX = size of the loss for X
PRLX = probability of loss for X

The damage may consist of several things:

[4] This concept of value of a partner in relative terms (excess value with respect to the next best alternative) is not present, at least not explicitly, in TCE. TCE, as developed by Williamson, assumes that for contracting out, there is a specialised supplier, and that he offers value, in terms of ability to produce more efficiently because at a larger volume, to the extent that the product is not specific to the one, focal user. The search for such a partner, and the evaluation of his relative worth, is not part of the analysis (in contrast with Coase, who does pay attention to transaction costs in the form of search). One could perhaps argue that implicitly it is present in Williamsonian TCE, in the possibility of new contingencies ("external uncertainty"), that may arise and which a partner might exploit opportunistically. However that may be, we need to make it explicit to deal with the risk that a relation is destabilized due to the emergence of a novel, more attractive alternative for one of the partners. This is a pervasive problem that can hardly be neglected. It is part of the project of making TCE dynamic, by looking at the evolution of relations in the light of changing conditions.

- Loss of extrinsic value, in the form of economic surplus from the exchange (due to neglect or accident). This may include disasters, with a cost that exceeds (one's share in) the value of the surplus.
- Redistribution of the economic surplus (due to opportunism)
- Damage due to a break of the relation (which may be non-intentional, e.g. when the partner goes bankrupt)
- Loss of intrinsic value, in the form of behavioural trust
- Loss due to spill-over of proprietary information

Spill-over of sensitive information to competitors, via the partner, is always a risk, but while the relation lasts the partner has an interest in preventing it. The risk is particularly high if the relation is broken on purpose rather than by accident. In fact, sensitive information may be treated as a "hostage".

Loss for X due to break of the relation equals switching costs (SWX) plus relative value of the partner Y (VYX). The cost of breakage determines dependence on cooperation in the sense of the "captiveness" of X (CAPX): damage due to redistribution of surplus cannot systematically exceed the damage due to a break of the relation, because if it did, X would be likely to break the relation. Disasters, however, could exceed that limit. Like accidental damage of breakage, they are associated with competence trust rather than behavioural trust.

Switching costs (SWX) include the costs associated with specific investments that are typical of TCE: specific investments that one has oneself incurred, guarantees given to cover the risk of specific investments by the partner, the value to X of hostages supplied, etc. Relative value of the partner (VYX) may include many dimensions, such as: efficiency, developmental capability, flexibility, adherence to specifications, network position, value as a source of learning, international presence, continuity.

If we look only at behavioural trust and ignore disasters, risk depends wholly on opportunism. In formula:

$$SLX < CAPX = SWX + VYX \qquad (3)$$

The probability of damage to (PRLX) then equals probability of opportunism by Y (PROY), and depends on:

- incentives towards opportunism by Y (IOY)
- opportunities for opportunism by Y (OOY)
- propensity towards opportunism by Y (inverse of trustworthiness; POY)

(4)

Here we recognize the sources of cooperation from figure 1.

Each of these forms a necessary condition for opportunistic acts, which is expressed by the following multiplicative specification:

$$PRLX = PROY = IOY \times OOY \times POY^{5} \qquad (5)$$

where IOY, OOY and POY are normalized to take values between 0 and 1:

OOY = 0 for a closed contract and = 1 for absence of any formal constraints on action; POY is the probability that Y will utilize opportunities for opportunism.

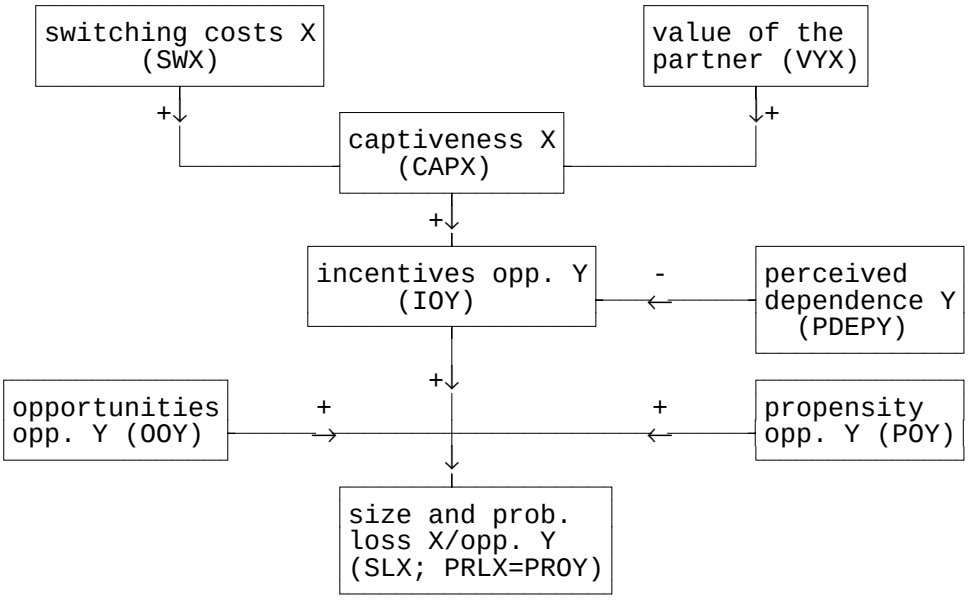
Incentives towards opportunism (IOY) belong to the source of interest (figure 1), and are associated with what in TCE is called "private ordering" or "relational contracting". It depends on the captiveness of X (CAPX), and hence on the value of Y to X and on switching costs. The first depends on the degree to which Y has adapted to the specific demands of X, which is likely to yield specific assets[6], and the latter on how the risks of specific investments are distributed,

[5] There is similarity here to the notion in TCE that there are transaction costs only if there are specific assets and there is bounded rationality and there is opportunism. As we shall argue, specific assets yield switching costs and hence captivity and hence an incentive to opportunism; bounded rationality precludes closed contracts with perfect monitoring and thereby opens opportunities for opportunism; the possibility of opportunistic conduct is here reconstructed as "propensity towards opportunism".

[6] Likely but not necessary. Flexible production technology allows for specific products with non-specific assets (Nooteboom, 1993c).

by cross-ownership or guarantees, exchange of hostages, etc. The incentive for Y also depends on pressures from competition or owners/shareholders on Y to utilize opportunities for short term profit or saving. They also depend on the extent to which Y perceives himself to be dependent on X (PDEPY): if Y is more dependent on X than vice versa, it is in Y's interest to be careful with opportunism. Y should also take into account the effect that opportunistic action may have on intrinsic value of the relation and on perceived probabilities of an ongoing relation and hence future value. Particularly if he takes into account possible retaliation by X, which may yield a downward spiral of deepening distrust.

figure 2: determinants of risk of opportunism for X



Opportunities for opportunism (OOY) belong to the source of coercion, by contractual, legally enforceable restrictions on Y's conduct, or what in TCE is called "legal ordering". As recognized in TCE, they depend also on the occurrence of unforeseen contingencies ("external uncertainty"), which arise to the extent that the environment is volatile (shifts in technologies or markets, for

example). They also depend on X's ability to monitor Y's actions ("asymmetric information"), and on Y's competence to utilize the opportunities. In connection with this they are also related to firm size: due to a greater spread of activities over more products and wider markets, larger firms have more diversified partnerships and thereby can better spread risk and cross-subsidize activities (Nooteboom, 1993a).

Propensity towards opportunism belongs to the sources of trust: norms/values, ethics, customs, and bonds of kinship or friendship. Trust tends to grow as the relation proceeds successfully, because bonds of empathy may get stronger, or because habituation occurs. The setting up of a common cognitive base (getting to know who is who in each other's organizations, mutual understanding, development of procedures and routines) can be seen as mutual specific investments.

The results so far are illustrated in figure 2. This scheme has been partly tested in empirical research (Berger, Noorderhaven & Nooteboom, 1995).

Note that through the basic variables in figure 2, opportunism may be triggered or lessened by external events (not created by the partners), such as (the list is not exhaustive):

- emergence of a new potential partner for X, lessening the relative value of Y (VYX), and possibly reducing switching costs for X (SWX), and thereby reducing the captiveness of X
- some unexpected situation presents a novel opportunity for Y to exercise opportunism (OOY)
- the information X has for monitoring changes (which may be due, for example, to a change of technology (OOY)
- a change of law or regulation affects opportunities for opportunism (OOY)
- appearance of a novel competitor puts pressure on Y to utilize opportunities for opp. (IOY)
- Y is taken over by a more or a less aggressive firm or the contacts of X at Y are replaced (POY)

Note also that the arrows from IOY, OOY and POY intersect, rather than going directly to the outcome of opportunistic conduct. This is designed to reflect the possibility of interaction effects. A large value of X's captivity (CAPX) determines the gain that Y may take from opportunism ("golden opportunity", see (3)), and this may affect his propensity to grasp the opportunity (POY). If X seeks to restrict Y's opportunities by detailed legal contracts and close monitoring (OOY↓), this may antagonize trust, and Y's propensity to opportunism may increase (POY↑). Not included in the figure is the possibility of the following, related effect: restrictions on Y's conduct signal to Y that X has no trust, which may suggest to Y that X himself is not trustworthy, so that Y is more inclined to take countermeasures of limiting X's actions. Thus we may arrive at a cycle of mutual limitation and breakdown of trust.

6. Model of governance

For governance (control), we must add a control loop, whereby partners can redesign the relationship to lessen dependence. This implies actions which constitute events that are internal to the relation, and may call forth reactions by the other side, and so on, perhaps until some equilibrium arises, possibly in the nature of a Nash equilibrium. We turn to such equilibria later.
There are two basic options for redesign of the relation:

> Modify the causative parameters of risk for X in figure 2: (6)
> VYX = value of the partner. This can be increased by investing in the partner, or decreased by developing alternatives (remember that value is relative to the next best alternative).
> SWX = one's switching costs. This can be changed by changing the stock of specific investments, or the underlying technology; redistributing their ownership; changing guarantees given to the partner; adding or retracting hostages, etc.
> OOY = the partner's opportunities for opportunism. This can be changed by changing contractual terms or one's capacity for monitoring, or by trying to stabilize the environment that generates unforeseen contingencies.
> IOY = the partner's incentives towards opportunism. This can be re-

duced above all by increasing his perceived dependence (PDEPY). We return to this later.
POY = the partner's propensity towards opportunism. This is the most difficult to change directly: it is dependent on the growth of trust in time, which one can try to affect by building friendship or empathy, and trying to develop further joint ethics, procedures or routines.

One can also modify the parameters in the scheme that structures risk for one's partner Y, which mirrors figure 2. There, SLX would indicate the size of the loss for Y due to opportunism by X, and PRLY its probability.

Modify the causative parameters affecting partner Y's risk: (7)
VXY = one's value to the partner. This can be increased (decreased), by investing (divesting) in one's capabilities, or by eliminating (generating) alternatives for the partner (remember that one's value is relative to Y's alternative partners).
SWY = the partner's switching costs. These can be changed analogously to the change of one's own switching costs.
OOX = one's opportunities for opportunism. These can be changed by changing contractual terms, affecting the partner's capability of monitoring (e.g. closing oneself off from scrutiny), or creating a more turbulent environment, in which novel opportunities may arise.
IOX = one's own incentives towards opportunism. This can be changed especially by changing one's dependence.
POX = one's propensity towards opportunism. Relevant here is the propensity as perceived by the partner. This may be affected by signalling: either to exaggerate or to hide true propensity. One may also redistribute roles of personnel, e.g. by replacing trusted long term contacts by new ones, replacing technical colleagues by legal formalists, etc.

When analyzing actions and their triggers, we should consider the possibility of imperfect perception. The most crucial problem of limited perception pertains to the partner's propensity towards opportunism (POY). This seems so basic to the issue that it cannot be ignored.
One will form an opinion on the partner's propensity on the basis of:

- true propensity, to the extent that one can infer such propensity directly,

on the basis of experience or reputation

- actual opportunistic behaviour

For modelling purposes, one might envisage a Bayesian procedure, whereby prior estimates of propensity towards opportunism are adapted as a function of events. If no opportunism is perceived, the subjective probability of the partner's taking advantage of opportunities for opportunism may decline; when opportunism is perceived, it will increase.

A further complication arises when something happens to the detriment of X, but Y claims that it is due to some mishap beyond his control. Is this true or is Y trying to mask opportunism?

Parameters concerning value (VYX, VXY), switching costs (SWX, SWY), opportunities for opportunism (OOY, OOX) and incentives for opportunism (IOY, IOX) may be more reasonably be assumed to be observable, with some qualifications:

- Note that OOY/OOX include the possibly limited capacities of monitoring. When we assume that OOY/OOX are known, we assume that partners are aware of each other's limitations in monitoring.
- The assessment of value includes expectations about a prolonged relationship, which depend on imperfectly perceived propensities of the partner. Furthermore: since values of partners are relative, they presume knowledge about alternative partners and their value, which presupposes ongoing collection of information on such alternatives. It is possible that this is in fact neglected.[7]

Since governance allows for change of parameters on both sides of the relation, we need a scheme that contains both sides, as illustrated in figure 3.

The figure contains figure 2, for both X and Y, and adds the following:

[7] A striking illustration of this is offered by Joag (1995). A firm that made the transition from customary multiple, price-oriented sourcing to single sourcing aimed at cooperation in development, on the basis of long term contracts, failed to monitor the performance of the single sources relative to outside producers, and thereby made it too easy for them to relax and concentrate on other more demanding and competitive customer relations. After seven years the firm found out by accident that its suppliers had seriously lagged behind potential competitors.

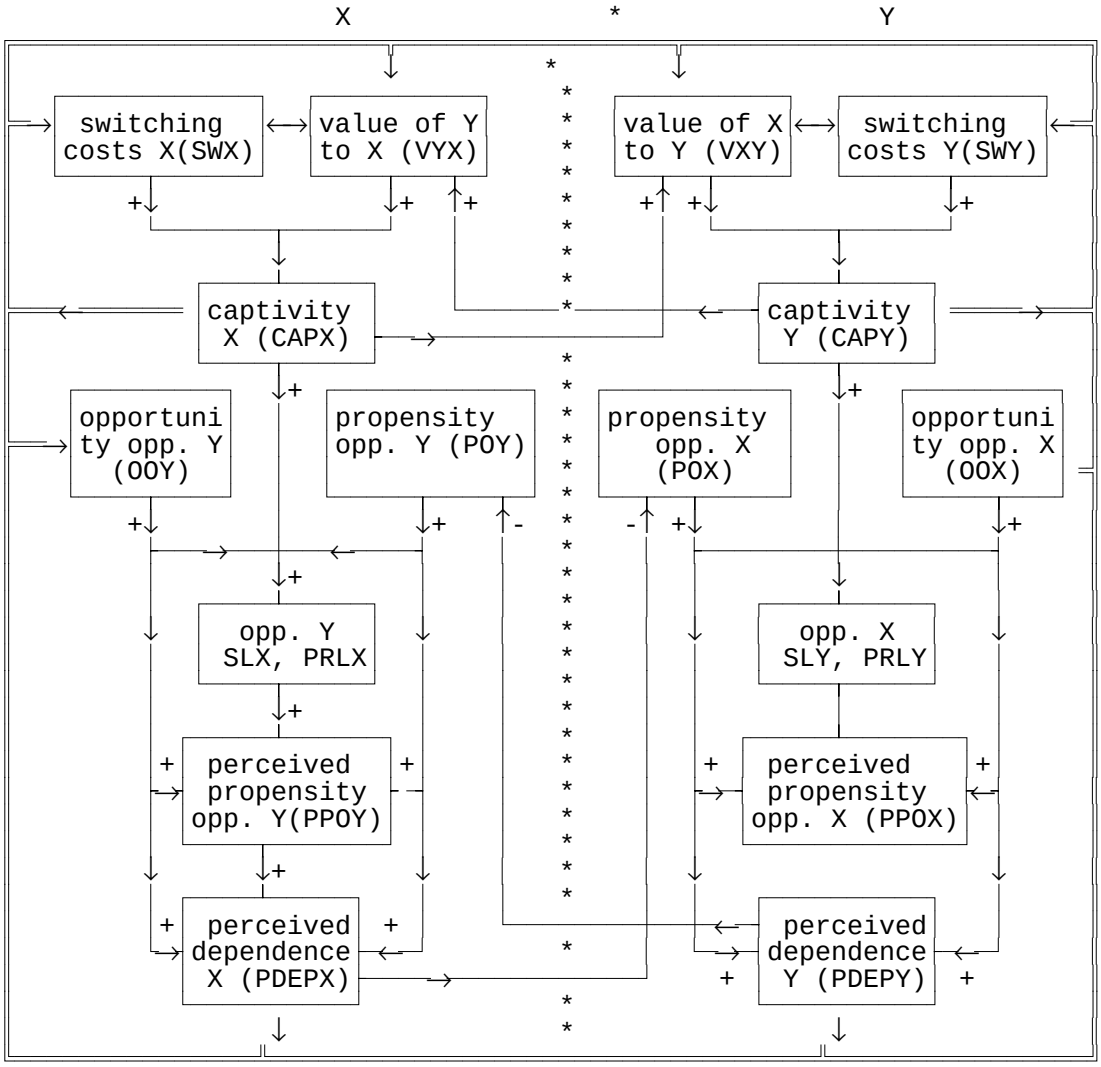
- the determination of perceived propensity towards opportunism, as indicated above
- the determination of perceived dependence
- a control loop, whereby parameters of the relation may be changed, with captiveness and perceived dependence as possible triggers

Single lines indicate effects of parameters; double lines in the control loop indicate governance by change of parameters. Note that we include the (negative) effect of one's own perceived dependence on one's propensity towards opportunism. The other trust-related determinants, such as ethics, habituation and bonding are not included in the figure.

Note that apparently perverse acts of governance may be rational, for the sake of committing oneself and thereby facilitating participation by the partner. For example: one may bind oneself with an increase of switching costs (SWX), thereby to increase one's dependence (PDEPX), to align it better, for example, with high dependence of the partner (PDEPY), due perhaps to high specific investments. This may be done by participating in their ownership, or by giving hostages.

Another noteworthy strategy is the following. If one's captivity becomes negative (CAPX<0), perhaps because one has found a more attractive alternative partner (with an excess of value greater than switching costs), a plausible action would be to try and get out of the relation at the lowest possible cost. However, there is the alternative of investing in one's partner (increasing VYX) so much that one no longer wants to get out.

figure 3: interaction between X and Y



7. Generic Strategies

We have generated a quite rich structure of interaction. To maintain grasp of complexity we now reduce the multitude of possible actions of governance to a

small set of "generic strategies", in figure 4.

figure 4: typology of strategy (for X)

	fastening	loosening
adversarial	constrain partner (CAPY↑, ROY↓) block alternatives unproductive hostages restrict actions close monitoring *binding*	reduce own constraints (SWX↓, ROX↑) reduce values (VYX↓, VXY↓) decrease own bonding (POX↑) *breaking up*
cooperative	increase values (VYX↑, VXY↑) increase bonding (POX↓, POY↓) increase own constraints (SWX↑, ROX↓) productive hostages (SWX↑, SWY↑) *making attractive*	reduce switching costs (SWX↓, SWY↓) decrease bonding partner (POY↑) *setting free*

a cooperative strategy also is: *submission*; i.e. accept an aggressive strategy (binding, breaking up) of the partner, e.g. by accepting constraints (ROX↓, SWX↑).

Note that there are adversarial and cooperative means of increasing partner's captivity (CAPY↑). Cooperative: increase one's relative value to the partner (VXY↑) by investing in further adaptation to the partner, and thereby incurring specific investments; invite hostages in the form of information about the partner's technology in order to improve cooperation in development of his products or processes (SWY↑). Adversarial: increase one's relative value (VXY↑) by blocking Y's access to alternative partners; demanding "improductive hostages", without adding value for Y (SWY↑).

By means of analysis in the spirit, if not the form, of game theory, we can now explore sequences of actions and reactions, in different situations, by

means of backward induction, to see what (sub-game perfect) equilibria may appear. Many situations can be set up for analysis, but for the purpose of illustration we discuss only two particularly interesting situations, at the beginning of a relation, and at its finish.

At the beginning of a relation, a key problem, as indicated also in TCE, is that ex ante it is difficult to judge propensity towards opportunism.[8] Then, as argued in TCE, one should take the possibility of opportunism into account.

According to figure 4, fastening can occur by "binding" or by "making attractive". Which is preferable in view of the partner's likely reactions? How do choices of strategy affect the development of trust, under different conditions of external events, availability of information, etc.? Should one begin with formal, contractual measures until trust has been built up to relax them, or vice versa: build trust first and formalize later? How to set the ball rolling?

Suppose that X chooses binding. If this takes the form of tying Y down in a formal detailed contract (ROY↓), the danger is that this may antagonize any inclination towards trust that Y may have, or may create the impression that in his expectation of opportunism X himself is inclined towards it. The first may increase Y's propensity towards opportunism (POY↑), and the second may cause Y to retaliate with restrictive measures (OOX↓). There is a danger of a vicious cycle of distrust and mutual restrictions. Game theory also teaches us that it is unwise to demand that the precise date of terminating the relation is set in advance, as part of formal, legal ordering, because then cooperation may unravel before it can properly start. Jockeying for the best exit condition rather than exploration of novel potentialities determines the relation. Private ordering is also cheaper, and allows for greater flexibility.

Thus, this approach is ill advised, if X wants to develop the relation.

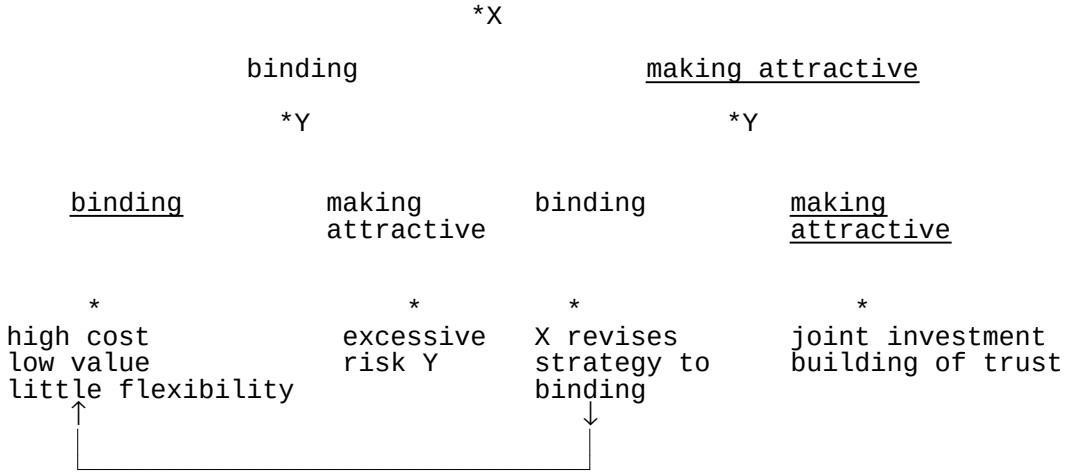
[8] In fact, this problem is exaggerated in TCE. The very existence of the problem generates a demand for a reputation of reliable partnership. Firms may deliberately build up such a reputation by foregoing opportunities for opportunism, or such reputation may issue from real trustworthiness (e.g. from an ethical stance). So, ex ante there are differences in reputation that may provide some basis for the choice of partner and form of governance. However, here we go along with the assumption that this basis is absent or very slim.

Other adversarial measures of binding, such as blocking the partner's access to alternatives, or demanding improductive hostages likewise invites retaliation and a closing rather than opening of the relation. Y would be unwise to react by the alternative strategy of "making attractive", since that would make him extremely vulnerable, given X's adversarial orientation, and Y would virtually be forced to retaliate with the same actions of binding.

Alternatively, X could choose "making attractive". He could invest in his value to the partner by engaging in specific investments (VXY↑). This would contribute to fastening: the partner becomes more captive (CAPY↑). This argument is also present in TCE. X may also offer productive hostages in the form of information about his technology, for the purpose of helping Y develop his competence. A particularly interesting form of doing this is to invite specialists from Y for a stay at X's facilities. This simultaneously yields improvement of Y's monitoring of X (OOX↓). Conversely, X may supply specialists for a stay at Y, which increases X's monitoring of Y (OOY↓). The possible conflict between people "qua persona" and their organizational roles presents a complication here. People stationed at Y may establish personal bonds beyond the interest of X. Their value for monitoring, for example, may become void.

Y would be very unwise not to respond in the same fashion, if he is interested in developing the relation. He would thereby forego the opportunity of a virtuous circle of mutual investment and the development of trust, that promises to increase extrinsic as well as intrinsic value. If he reacted with binding, then so would X, with the negative results discussed above.

figure 5: starting a relation (VYX>0; VXY>0)



Note that the exchange of hostages in the form of information about one's technology carries the risk of spill-over (that is what makes it a hostage). Some guarantees are then required that the partner will be careful to control accidental spill-overs.

In view of uncertainty about propensities to opportunism, this build-up of the relation under private rather than legal ordering should proceed cautiously, and step by step. In the process, if parties refrain from opportunism, trust may grow, on the basis of bonding and habituation, and perhaps the development of a joint ethic. This game is illustrated in figure 5, where underlining indicates preferred strategies, forming a unique subgame perfect equilibrium.

Now we consider the more difficult issue of ending a relation. Here we take the following situation: one side (X) wants to opt out from the relation, because the relative value of the partner has become negative (VYX < 0; perhaps because a more attractive partner has appeared on the stage), but switching costs still exceed it (so that CAPX > 0), which prevents exit, while the other side (Y) wants to continue the relation because he still values the partner more than alternatives (VXY > 0). What strategy should X take, in view of likely reactions from Y?

Binding is not a likely alternative for X: why bind the partner while one

wants to get out? The remaining options are: an aggressive loosening (breaking up), or a cooperative one (setting free), or X might choose to reinvest in the partner so that X no longer wants to exit (making attractive). How would Y react to these actions, and in view of that, what should X choose?

Suppose X chooses the strategy of breaking up. Y's purpose is to continue the relation. For this, he could react aggressively, by trying to bind X. Thus a tug of war arises, with X trying to get out and Y trying to tie him down. This may succeed, for example when Y can effectively threaten to harm (a possible new) hostage whose value to X exceeds the opportunity cost of maintaining the relation (e.g: pass on sensitive information to a competitor of X). However, such action is likely to have negative effects on mutual trust (POX↑, POY↑), resulting in additional costs for protection against the heightened risk of opportunism. Intrinsic value of the relation is likely to be destroyed, and implicit obligations need to be replaced, more expensively and less agreeably, by explicit, formal ones. If Y is successful and the relation continues, it may be at a considerable cost to both sides. The battle may even reduce the value of X for Y so much that Y too no longer wants to continue the relation. If X knows this, he will try to generate that effect by "pestering" Y as much as he can, with Y again trying to make himself immune to this, and the battle deepens.

Y may also choose the strategy of making attractive. If this is a realistic option (Y can manage to interest X in a renewed relation), it is no doubt the preferred one. The problem with this, however, is the following: suppose X does not really want to end the relation, but can effectively pretend that he does, and can predict that Y will react by making attractive. This is a plausible prediction, because it would be the best reaction for Y if he considered it feasible. Then X would be rewarded to engage in such pretense: threaten breakage to let the other side give more input. If Y sees through this ploy, however, he has an interest in credibly threatening with an aggressive reaction of binding.

But if X makes moves of breaking up, can Y distinguish between real intentions towards breaking up and a feint? In the first case making attractive would be the best reaction (if feasible), and in the second case it would be best to credibly threaten the aggressive binding reaction to discourage X. If Y cannot

make this distinction, he may erroneously react aggressively, because he mistakes a real intention to opt out as a mere feint, and thereby misses an opportunity to restore the relation. Conversely, if he mistakes a feint for a real desire to break out, he may act like a "sucker" in taking the bait. What are the implications for the choice of X? If X really wants to get out, but expects Y to interpret his moves towards breaking up as bluff, he may prefer some other loosening strategy, to be discussed below. If Y cannot effectively bind X without destroying his value for Y, and has no hope of renewing the relation, he may threaten to react aggressively to X's breaking up by taking that strategy as well, and thereby make the price of dissolution to X as high as possible. If Y has this option, X may better take some other action. If Y lacks the means to make this credible, the only remaining options are to submit or set free. If X knows this, it will encourage him to take the action of breaking up.

Suppose X chooses the strategy of setting free, by lowering Y's switching costs (e.g. returning hostages, paying compensation for the loss of specific assets) and/or helping Y to seek alternative partners (thus lowering his relative value to Y). How would Y react? If he reacts with an aggressive binding strategy, X can retaliate by reverting to an aggressive breaking up, and this is an option for Y only if he can win the resulting battle without damaging the relation too much. The price to be paid here will generally be too high. Y could consider the strategy of making attractive, and if he can thereby change X's desire into a continuation of the relation, this is the preferred action for Y. However, there is a similar problem to the one we met before: this may entice X to feint a desire to dissolve the relation by making moves of setting Y free. Y might threaten to revert to an aggressive breaking up, but since X is in a better position to take that action and retaliate, it would not be wise for Y to take this action: it does not contribute to his interests at all. It would be preferable to go along with X's help in setting him free.

Finally, X could choose to make attractive: reinvest in Y to make him sufficiently attractive. This is the best action for X if the cost of doing so is less than the opportunity cost of foregoing the shift to the alternative partner.

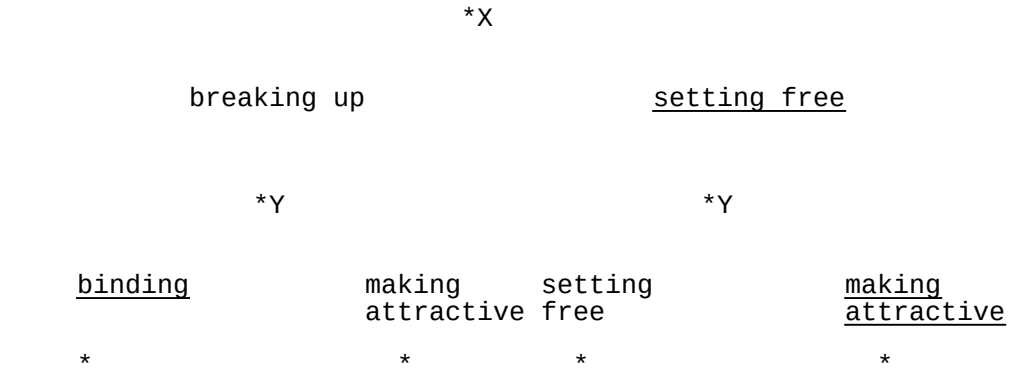
So, in the end, what is the best choice for X? That depends on the

conditions. If his preference for the next best alternative partner is less than the cost of making Y sufficiently attractive again, that seems the best action. What if that is not the case? If Y can make himself sufficiently more attractive to X at a cost less than Y's captivity (CAP Y), Y may be triggered to do so by X threatening to break up. But Y may react to that aggressively by binding, particularly if he suspects that X is bluffing. That would yield a destructive battle. If X can make that battle escalate to the point that Y also wants to get out, this may achieve X's purpose, but at considerable cost. To the extent that Y can credibly signal commitment to an aggressive binding reaction, it would be better for X to choose setting free, while (credibly) threatening to revert to breaking up if Y were to react by binding. This leaves Y with the choice to react either by making attractive or setting free. Either fits X's interests well. So, unless X can easily reanimate the relation by renewed investment, he would best take the action of setting free, with a threat to break up if T does not react cooperatively by either setting free or making attractive. But if Y suspects that X is bluffing, he may call this bluff by binding. If X cannot convince Y of his sincerity, he reverts to breaking up. If Y has little scope for binding, and no realistic perspective for making attractive, and no credible threat of breaking up, he can only submit. Conversely, if X can effectively bind X at low cost, X may have to submit and continue the relation he no longer values.

This game is illustrated in figure 6, where again preferred strategies are indicated by underlining. As appeared from the analysis, we cannot unequivocally indicate what solution would always be best. That depends on details of the situation. The solution indicated in the figure is based on the following conditions:

- X cannot profitably renew the relation by re-investing in Y, so that "making attractive" drops out
- Y has no better basis than X for "breaking up", because he is in a weaker position
- Y is not sure whether to believe X's desire to end the relation
- Y has some capacity for binding, but not without jeopardizing the value of the relation for himself

figure 6: ending or renewing a relation: VYX < 0; CAPX > 0; VXY > 0



Since X cannot be sure that Y will not react to breaking up by aggressive binding, since binding may be Y's best response to discourage any bluffing by X about his intentions to opt out. breaking up is not his best strategy. That is setting free, but with the threat of reverting to breaking up if Y chooses binding. Then Y has a choice between setting free or making attractive. Both are attractive to X. Y will choose making attractive if it is realistic. If it is not, he has little option but setting Y free.

In view of the analysis, it is wise, in the development of a relation, to reserve strategic scope for the occurrence of this situation, by maintaining some capacity to bind the partner, and not allowing excessive capacity for it to the partner. This can be part of negotiation, to arrive at some but limited and balanced binding capacity on both sides. There is no reason that one could not be quite open about this: it is in the interest of both parties not to lock each other up in prisons that one cannot escape. This can conceivably be done without setting the relation too much upon a footing of distrust.

It is perhaps significant that in both situations analyzed the more informal non-contractual and cooperative strategies came out as the best. This confirms earlier studies (Beale & Dugdale, 1975; Macaulay, 1963), and suggests that the emphasis of the IMP group on cooperative relations is well founded.

8. Further studies

The analysis of the situations described above can be further detailed by further distinguishing different instruments within strategies, and by taking into account external conditions and events.

If conditions are turbulent, in the sense that there is much entry and exit of firms, relative value is subject to shifts that may destabilize a relation. We already indicated the cost of adjustment and inflexibility of formal contracts, and the greater relative attraction of measures of trust, when changes in demands upon the relation are to be expected. On the other hand, if trust is based on close personal bonds, this can yield a conflict with organizational roles and tasks; particularly when the relation needs to be stopped, and then replacement of personnel may be required. When technology progresses to become more flexible, and enables differentiated production at low costs of switching between products, the level of specificity of investments declines, resulting in lower switching costs and lesser needs of governance of hold-up risk. The first may destabilize a relation, and the latter may stabilize it.

Clearly, the model can be used for the analysis of many other situations. We discussed the ending of a relation because one partner encountered a more attractive alternative. There can be other triggers for ending a relation, such as escalation of distrust, which may tragically be triggered by a misunderstanding.

Some of the issues can best be studied with the help of game theory, in a loose or a formal way, and others by means of simulating the development of the relation. In comparison to simulation, game theory is useful for its analytical parsimony, but it leaves questions how, by what paths, Nash equilibria may be reached. In repeated interaction, parameters are likely to shift along the way, such as the build-up of trust and shifting goals, and analysis by repeated games may be either unrealistic (not taking into account such shifts) or no longer soluble analytically (cf. Gilbert, 1989).

For the evolution of relations we may better resort to simulation; particularly if we want to investigate the robustness of a strategy under different conditions, events and parameter shifts. The problem with simulation often is

that it generates too much complexity in terms of numbers of parameter constellations that could be investigated. Perhaps the two methods can be combined, with game theory providing anchors or goals, to give some order and direction to simulation, and simulation to test how Nash equilibria may be achieved. For practical purposes of diagnosis and design of relations, complexity should be reduced by setting parameters to values that represent the case at hand. Whether this works will be explored in case studies of firms.

As indicated before, it is uncertain how far formalization can usefully be taken. But wherever it stops, it will have contributed to a more coherent and systematic diagnosis and design of relations, beyond a mere checklist of relevant factors. Hopefully, that also applies to what has been developed so far.

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